

FOSSIL GROUPS IN THE LOCAL UNIVERSE

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The two galaxies observed as part of this project were originally selected as fossil group candidates because of their isolation from other galaxies and their apparent high X-ray luminosity and extended X-ray emission. However, the X-ray data available was minimal, being drawn from the ROSAT All-Sky Survey. We have performed an initial analysis of the XMM data from both galaxies and found that their gaseous halos are smaller, cooler, and less luminous than expected. In the case of NGC 57, the RASS estimate of extent and luminosity was biased because of a previously unidentified background group which is visible in the XMM data to one side of the galaxy. In the case of IC 1531, the contribution from background point sources near the galaxy appears to be to blame. This suggests that both galaxies should be reclassified as isolated ellipticals. Such systems are very rare, and currently poorly understood; for comparison, there are now 6-10 known fossil groups, but only one isolated elliptical with useful X-ray data.

We are currently re-analyzing the data for the two galaxies to take advantage of the calibration improvements of SAS 6.1, and to include calculations of the mass profiles of the two systems. A paper is currently in preparation dealing with the X-ray properties and environment of the galaxies, and we expect to submit this to the Astrophysical Journal within the next two months. Multi-band optical imaging of the field surrounding NGC 57 has been acquired to confirm its isolated status and provide more information on the background group. IC 1531 was accepted as a target in Chandra cycle 6 as part of a related proposal, and we intend to add this new observation to our XMM data when it becomes available. A second paper is planned to include the results of this combined analysis.